



PORTUGAL

The Report referred to in Article 9 of Directive 2003/99/EC

TRENDS AND SOURCES OF ZOONOSES AND ZOOBOTIC AGENTS IN HUMANS, FOODSTUFFS, ANIMALS AND FEEDINGSTUFFS

including information on foodborne outbreaks and
antimicrobial resistance in zoonotic agents

IN 2005

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: **Portugal**

Reporting Year: **2005**

Institutions and laboratories involved in reporting and monitoring:

Laboratory name	Description	Contribution
LNIV - Laboratório Nacional de Investigação Veterinária	National Veterinary Laboratory	
LRMADEIRA	Veterinary Services of Região Autónoma da Madeira	
DRAEDM	Veterinary Services of Direcção Regional de Agricultura de Entre-Douro e Minho	
DRATM	Veterinary Services of Direcção Regional de Agricultura de Trás-os-Montes	
DRABL	Veterinary Services of Direcção Regional de Agricultura da Beira Litoral	
DRAALG	Veterinary Services of Direcção Regional de Agricultura do Algarve	
LMV - Laboratório de Medicina Veterinária	Private Veterinary Laboratory	
DGV - Direcção Geral de Veterinária	National Veterinary Authority	Reporting Authority
IBCP - Instituto Bacteriológico Câmara Pestana	Scientific Institute	
UAVISEU - União dos ADS de Viseu	Private Laboratory	

INSA - Instituto Nacional de Saúde Dr. Ricardo Jorge	Reference laboratory belonging to the Ministry of Health	Human Health information and foodborn outbreaks
ASAE - Autoridade de Segurança Alimentar e Económica	National Authority for Food Safety	
DRAAL	Veterinary Services of Direcção Regional de Agricultura do Alentejo	
LRAÇORES	Veterinary Services of Região Autónoma dos Açores	
SEGALAB - Laboratório de Sanidade Animal e Segurança Alimentar	Private Veterinary Laboratory	
FMV - Faculdade de Medicina Veterinária	Veterinary School in Lisbon	
DRABI	Veterinary Services of Direcção Regional de Agricultura da Beira Interior	
DRARO	Veterinary Services of Direcção Regional de Agricultura do Ribatejo e Oeste	

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/EC¹. The information has also been forwarded to the European Food Safety Authority (EFSA).

The report contains information on trends and sources of zoonoses and zoonotic agents in Portugal during the year 2005. The information covers the occurrence of these diseases and agents in humans, animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and commensal bacteria as well as information on epidemiological investigations of foodborne outbreaks. Complementary data on susceptible animal populations in the country is also given.

The information given covers both zoonoses that are important for the public health in the whole European Community as well as zoonoses, which are relevant on the basis of the national epidemiological situation.

The report describes the monitoring systems in place and the prevention and control strategies applied in the country. For some zoonoses this monitoring is based on legal requirements laid down by the Community Legislation, while for the other zoonoses national approaches are applied.

The report presents the results of the examinations carried out in the reporting year. A national evaluation of the epidemiological situation, with special reference to trends and sources of zoonotic infections, is given. Whenever possible, the relevance of findings in foodstuffs and animals to zoonoses cases in humans is evaluated.

The information covered by this report is used in the annual Community Summary Report on zoonoses that is published each year by EFSA.

¹ Directive 2003/99/EC of the European Parliament and of the Council of 12 December 2003 on the monitoring of zoonoses and zoonotic agents, amending Decision 90/424/EEC and repealing Council Directive 92/117/EEC, OJ L 325, 17.11.2003, p. 31

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1. ANIMAL POPULATIONS

The relevance of the findings on zoonoses and zoonotic agents has to be related to the size and nature of the animal population in the country.

A. Information on susceptible animal population

Sources of information:

DGV - Direcção Geral de Veterinária

INE - Instituto Nacional de Estatística

SNC - Serviço Nacional Coudélico

DGF - Direcção Geral de Florestas

Table Susceptible animal populations

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks		Number of holdings		Livestock numbers (live animals)		Number of slaughtered animals	
		Year*		Year*		Year*		Year*	
Cattle (bovine animals)	in total (1)	85275		85275		1359360		480925	
Dogs	in total (2)								
Ducks	in total (3)					4000000	2004	3100000	
Gallus gallus (fowl)	broilers (4)					181901000			
	in total (5)							164844000	
Goats	in total (6)							114896	
Mouflons	wild (7)					650			
Pigs	in total (8)	11472		11472		2117511	2003	5136514	
Rabbits	farmed (9)	100097	1999	100097	1999	1673702	1999	5529000	
Sheep	in total (10)							1087034	
Solipeds, domestic	donkeys (11)					55000	2000		
	horses - in total (12)					60000	2000	1408	
	in total (13)	62439	1999	62439	1999				
Turkeys	in total (14)					4582000	2004	3913000	
farmed	roe deer (15)	2		2		120			
	red deer (16)	28		28		442			
	fallow deer (17)	143		143		1102			
wild	fallow deer (18)					950			
	red deer (19)					4300			
	roe deer (20)					50			
Other poultry	in total (21)							8000	
Sheep and goats	in total (22)	69732		69732		2837571			
Quails	in total (23)					7800000	2004	9321000	

(1): Source: DGV, INE

(2): Source: DGV - Estimation

(3): Source: DGV, INE

(4): Source: INE

(5): Source: INE

(6): Source: DGV

(7): Source: DGF - Estimation

(8): Source: DGV, INE

(9): Source: DGV, INE

(10): Source: DGV

(11): Source: SNC

(12): Source: DGV, SNC

(13): Source: INE

(14): Source: DGV

(15): Source: DGF

(16): Source: DGF

(17): Source: DGF

(18): Source: DGF - Estimation

(19): Source: DGF - Estimation

(20): Source: DGF - Estimation

(21): Source: DGV - Includes pheasants, pigeons, geese, ostriches, partridges and helmeted guineafowls.

(22): Source: DGV

(23): Source: DGV

Footnote

Dogs: 1.500.000 animals

2. INFORMATION ON SPECIFIC ZOOLOSES AND ZOONOTIC AGENTS

Zoonoses are diseases or infections, which are naturally transmissible directly or indirectly between animals and humans. Foodstuffs serve often as vehicles of zoonotic infections. Zoonotic agents cover viruses, bacteria, fungi, parasites or other biological entities that are likely to cause zoonoses.

2.1. SALMONELLOSIS

2.1.1. General evaluation of the national situation

A. General evaluation

National evaluation of the recent situation, the trends and sources of infection

Salmonellosis in animals (other than *Gallus gallus*):

The animals are sampled on a voluntary basis. The data come from sick animals sent to laboratory for bacteriological analysis or to control herds.

There is a Control Programme for *Gallus gallus* (breeding flocks). There is also going a baseline study on the prevalence of salmonella in broilers.

Control measures are been taken in positive flocks of laying hens.

Additional information

Diagnostic techniques:

Serology: Rapid Plate Agglutination for *S.pullorum/gallinarum*.

Bacteriology:

- Pre-enrichment in

- Ø Buffered Peptone Water (for faeces, bedding, nests samples and fluffy)

- Selective enrichment in:

- Ø Rappaport Vassiliadis with Soja broth / Mueller-Kauffman

- Plating on solid media:

- Ø XLD and SMID2 Agar

- Biochemical reactions by API 20E strips

Feedingstuff / Foodstuff: ISO 6579: 2002 (E) method

Typing of *Salmonella*:

Serotyping by Kauffman/White technique (searching of O antigens by plate agglutination and H antigens by tube agglutination).

Serotyping of isolates is performed at Laboratório Nacional de Investigação Veterinária (NRL).

Phagetyping for *Salmonella* Enteritidis and *Salmonella* Typhimurium has started on January 1999, see data on the tables.

Antimicrobial Susceptability testing of *Salmonella*

Resistance to antimicrobials is performed at Laboratório Nacional de Investigação Veterinária (NRL for *Salmonella*)

- The resistance to antimicrobials is performed by disk diffusion Method in Mueller Hinton Plates.

- The antimicrobials tested are: AMP10, AMC30, CF30, CMX30, CTX30, SxT25, G10, K30, TE30, C30, S10, NA30, UB30, N30, D30, ENR5 .

- The zone diameters are evaluated, following NCCLS Vol.19 nº1, January 99.

2.1.2. Salmonella in foodstuffs

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Hadar	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from broilers (Gallus gallus)									
fresh	LRMADEIRA	S	25g	4	1				1
- Surveillance - official controls (other than control and eradication programmes)	LNIV/DRAB	S	25g	50	2				2
meat products									
cooked, ready-to-eat									
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	1	0				
Meat from turkey									
fresh	UAVISEU	S	25g	2	0				
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	2	1	1			
- Surveillance - HACCP or own checks by industry	LNIV	S	25g	2	0				

Table Salmonella spp. in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, goats'								
raw	DRAALG	B	1ml	141	0			
Milk, sheep's								
raw milk for manufacture								
intended for manufacture of raw or low heat-treated products								
- Surveillance - official controls (other than control and eradication programmes)	LRMADEIRA	B	25g	1	0			
intended for manufacture of pasteurised/UHT products								
- Surveillance - HACCP or own checks by industry	DRABL	B	1ml	6	0			
pasteurised								
- Surveillance - official controls (other than control and eradication programmes)	LRMADEIRA	B	25g	1	0			
Cheeses made from cows' milk								
soft and semi-soft								
made from pasteurized milk								
- Surveillance - official controls (other than control and eradication programmes) (*)	LNIV	S	25g	4	0			
- Surveillance - official controls (other than control and eradication programmes) (**)	UAVISEU	S	1g	103	0			
	LRMADEIRA	B	25g	79	0			
Cheeses made from goats' milk								
soft and semi-soft								

made from pasteurized milk - Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	1	0			
Cheeses made from sheep's milk								
soft and semi-soft								
made from raw or low heat-treated milk - Surveillance - HACCP or own checks by industry	DRAALG/UAVISEU	S	1g	49	0			
made from pasteurized milk - Surveillance - official controls (other than control and eradication programmes) - Surveillance - official controls (other than control and eradication programmes) (*)	DRABL	B	1g	3	0			
	LNIV	S	25g	2	0			
	LRMADEIRA	B	25g	18	0			
Dairy products (excluding cheeses)								
dairy products, not specified - Surveillance - HACCP or own checks by industry	DRABL	B	1g	2	0			
Cheeses, made from mixed milk from cows, sheep and/or goats								
soft and semi-soft								
made from pasteurized milk - Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	2	0			

Footnote

S-Single;B-Batch

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Derby	S. Rissen
Meat from pig										
fresh	SEGALAU/UAISEU	S	25g	30	5			1	1	3
- Surveillance - official controls (other than control and eradication programmes)	LRMADEIRA	S	25g	10	0					
- Surveillance - HACCP or own checks by industry	LRMADEIRA	B	25g	3	0					
minced meat										
intended to be eaten cooked										
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	10g	2	0					
meat preparation										
intended to be eaten cooked	UAISEU	S	1g	10	3			3		
meat products										
raw but intended to be eaten cooked	LRACORES/SEGALAB	S	25g	142	2			2		
- Surveillance - HACCP or own checks by industry	LNIV/DRABL	S	25g	2	0					
- Surveillance - official controls (other than control and eradication programmes)	ASAE	S	100g	120	3			3		
cooked, ready-to-eat	SEGALAB	S	25g	78	0					
- Surveillance - official controls (other than control and eradication programmes)	ASAE	S	100g	80	2			2		
(*)	UAISEU	S	10g	108	0					
Meat from bovine animals										
fresh	LRMADEIRA/UAISEU	B/S	25g	9	0					

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- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	7	0					
minced meat										
intended to be eaten cooked	LRMADEIRA	B	25g	10	0					
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	10g	1	0					
- Surveillance - HACCP or own checks by industry	DRABL	S	10g	1	0					
meat preparation										
intended to be eaten cooked (*)	LRMADEIRA	S	25g	1	0					
	UAVISEU	S	1g	4	0					
meat products										
raw but intended to be eaten cooked										
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	1	0					
Other products of animal origin	SEGALAB	S	25g	6	3		1			2

Footnote

S-Single;B-Batch

Table Salmonella spp. in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Weltevreden	other serovars
Eggs										
table eggs	LRAÇORES	S	25g	20	3			3		
- at packing centre	UAVISEU	S	25g	11	0					
- at retail	DRAALG		25g	1	0					
- at packing centre - Surveillance - HACCP or own checks by industry	DRABL	B	25g	12	0					
Crustaceans										
unspecified										
raw										
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	9	1				1	
Molluscan shellfish										
raw	LRMADEIRA	B	25g	7	2					2
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	15	0					
- Surveillance - HACCP or own checks by industry	LNIV	S	25g	2	0					
Live bivalve molluscs										
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	7	0					
Fruits and vegetables										
precut	LRMADEIRA	S	25g	2	0					
Fishery products, unspecified										
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	10	0					

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- Surveillance - HACCP or own checks by industry	LNIV	S	25g	9	0					
Fish	UAVISEU	S	25g	2	0					
raw	LRMADEIRA	B	25g	71	0					
Other processed food products and prepared dishes										
unspecified										
(Catering)	LRMADEIRA	S	25g	3	0					
(Cooked meal)	UAVISEU	S	25g	16	0					
(Prepared fish meals with eggs)	INSA	S	25g	2	2	2				
Cereals and meals	LRMADEIRA	B	25g	27	0					
Bakery products	UAVISEU	S	25g	67	0					
cakes	LRMADEIRA	S	25g	7	0					
Other food of non-animal origin										
(Flour)	UAVISEU	S	25g	12	0					

2.1.3. Salmonella in animals

Table Salmonella in breeding flocks of Gallus gallus

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Tennessee	S. Anatum	S. Havana	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Gallus gallus (fowl)										
parent breeding flocks for egg production line										
during rearing period										
- Surveillance - official controls (other than control and eradication programmes)	DRABL	F	11	2				2		
during production period	LRMADEIRA	F	1	0						
parent breeding flocks for meat production line										
day-old chicks										
- Surveillance - official controls (other than control and eradication programmes)	DRABL	F	10	0						
during production period	LRMADEIRA	F	32	3				2	1	
- Surveillance - official controls (other than control and eradication programmes)	DRABL	F	67	25	1	1	1	23		
- Surveillance - official controls (other than control and eradication programmes)	DRABL	F	2	1						1

Footnote

F-Flock

Table Salmonella in other poultry (Part A)

	Source of information																			
	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. group D	S. Akashi	S. Virchow	S. Rissen	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Mbandaka	S. Thompson	Other serotypes	S. Anatum	S. Cremieu	S. Havana	S. Braenderup	S. Agona	S. Lexington
Gallus gallus (fowl)	laying hens sampling in the framework of the laying hen baseline study (1) - Surveillance - HACCP or own checks by industry	*	F	115	82	1	1	45	3	1	29	2	3	1	1	1	2	3	1	1
		DRABL	F	3	0															
		LNIV	A	63	1						1									
broilers	day-old chicks - Surveillance - HACCP or own checks by industry	LMV/LNIV	A	59	5				1	4										
		DRABL	F	14	5						5									
		**	A	59	4				1		3									
	during rearing period - Surveillance - HACCP or own checks by industry	DRABL	F	19	2						2									

[illegible]

(1) : *Salmonella* 6,7:-: 1 S. 6,7,14:-; 1 S. 6,7,14;z10:-
Other serotypes: 1 S. -;g,m:-; 2 S. *Rugosa*

Footnote

A-Animal; F-Flock; * - LNIV/LMV/SEGALAB/DRABL/LRACORES; ** - LMV/LNIV/LRMADEIRA

Table Salmonella in other poultry (Part B)

	S. 42:-:-	S. Hadar	S. Give	S. 6,8:-:-	S. Heidelberg	S. Newport	S. 6,7:-:-	S. Panama	S. Livingstone	S. Infantis	S. Istanbul	S. Tennessee
Gallus gallus (fowl)												
laying hens	1	2	1	2	1	2	1	3	6	1	9	
sampling in the framework of the laying hen baseline study (1)												
- Surveillance - HACCP or own checks by industry												
- at hatchery												
broilers												
day-old chicks												
- Surveillance - HACCP or own checks by industry												
during rearing period												
- Surveillance - HACCP or own checks by industry												
unspecified												
during rearing period												
during production period												
Ducks												
meat production flocks												
Turkeys												

unspecified - Surveillance - HACCP or own checks by industry	

(1) : Salmonella 6,7;-;-: 1 S. 6,7,14;-;-; 1 S. 6,7,14;z10;-
Other serotypes: 1 S. -ig,m;-; 2 S. Rugosa

Footnote

A-Animal;F-Flock

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Othmarschen	S. Give
Pigeons	LNIV	A	44	8	1	7			
- Surveillance - official controls (other than control and eradication programmes)	DRABL	A	2	0					
Pheasants	LNIV	A	3	0					
Partridges	LNIV/UAVISEU	A	40	5		4	1		
- Surveillance - official controls (other than control and eradication programmes)	DRABL	F	2	0					
Canary pet animals									
- Surveillance - official controls (other than control and eradication programmes)	DRABL	A	2	0					
Psittacidae	LRMADEIRA	A	5	0					
Swans	LRMADEIRA	A	1	0					
Parrots	LNIV	A	20	2		1			1
Birds	LNIV	A	114	6	1	4		1	
(Zoo birds)	LNIV	A	9	2		2			

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Othmarschen	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Pomona	S. Illb 61:i:z	S. Illb 61	S. Illa	Other serotypes	S. Newport	S. Give	S. Rissen	S. group B
Cattle (bovine animals)	LNIV/DRAAL	A	160	0													
	DRABL	A	3	0													
Sheep (1)	*	A	129	6				3			2				1		
	DRABL	A	6	0													
Goats	LNIV/DRAAL	A	55	0													
	DRABL	A	4	0													
Pigs (2)	LNIV/DRAAL	A	163	7		1	2								1	2	1
	**	A	40	1			1										
	DRABL	A	4	0													
fattening pigs	DRABL	A	4	0													
Solipeds, domestic	LNIV	A	25	0													
	LNIV	A	17	0													
Rabbits	***	A	64	2				2									
Dogs																	

[illegible]

(1): 2 - S. IIb 61:z13:1,5

(2): 1 - S. Group B (4,5.i:-)

(3) : 1 - S. IIb 61:c; 1 - S. IIIa 56:z4,z23;-; 1 - S. 60:-;-; 1 - S. 48:-;-; * - LNIV/DRAAL/LRMADEIRA; ** - LNIV/LNIV/LRMADEIRA; *** - LNIV/LRMADEIRA

2.1.4. Salmonella in feedingstuffs

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	Other serotypes	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of marine animal origin									
fish meal									
- Surveillance - HACCP or own checks by industry	LNIV	S	25g	4	0				

Footnote

S-Single

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Agona	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified
Feed material of cereal grain origin									
other cereal grain derived - Surveillance - HACCP or own checks by industry	LNIV	S	25g	6	3	3			

Footnote

S-Single

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified
Compound feedingstuffs for cattle								
final product								
- Surveillance - HACCP or own checks by industry	LNIV	S	25g	1	0			
Compound feedingstuffs for pigs								
final product								
- Surveillance - HACCP or own checks by industry	LNIV	S	25g	3	0			
Compound feedingstuffs for poultry (non specified)								
final product								
- Surveillance - HACCP or own checks by industry	LNIV	S	25g	2	0			
Pet food								
dog snacks (pig ears, chewing bones)								
- Surveillance - HACCP or own checks by industry	LNIV	S	25g	1	0			

2.1.5. Salmonella serovars and phagetype distribution

Table Salmonella serovars in food

Serovars	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin		Meat from pig (SEGALAB)		Meat from turkey (LNIV)		Crustaceans (LNIV)	
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
	Sources of isolates															
	Number of isolates in the laboratory															
Number of isolates serotyped																
Number of isolates per type																
S. Derby												1				
S. Hadar													1			
S. Rissen												4				
S. Typhimurium												1				
S. Weltevreden															1	
Total of typed Salmonella isolates																

Footnote

(*) M : Monitoring, C : Clinical
Source: LNIV, SEGALAB

Table S. Enteritidis phagetypes in food

Phagetype	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin		Other processed food products and prepared dishes (Prepared fish meals with eggs)	
	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
	Sources of isolates											
Number of isolates in the laboratory	N=										2	
Number of isolates phagetyped	N=										2	
Number of isolates per type												
PT 1b												
Other (1)												
Total of typed <i>Salmonella</i> isolates												
1												
1												

[illegible]

(1): PT 32

Footnote

(*) M : Monitoring, C : Clinical
Source: INSA

2.1.6. Antimicrobial resistance in Salmonella isolates

The methods of collecting, isolating and testing of the Salmonella isolates are described in the chapters above respectively for each animal species, foodstuffs and humans. The serotype and phagetype distributions can be used to investigate the sources of the Salmonella infections in humans. Findings of same serovars and phagetypes in human cases and in foodstuffs or animals may indicate that the food category or animal species in question serves as a source of human infections. However as information is not available from all potential sources of infections, conclusions have to be drawn with caution.

Table Antimicrobial susceptibility testing of S. Enteritidis in animals

n = Number of resistant isolates

	S. Enteritidis									
	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys		Cats	
Isolates out of a monitoring programme										
Number of isolates available in the laboratory					2				1	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n
Tetracyclines					2	2			1	1
Amphenicols										
Chloramphenicol					2	1			1	0
Cephalosporins										
3rd generation cephalosporins					2	1			1	1
Fluoroquinolones										
Ciprofloxacin					2	1			1	0
Quinolones										
Nalidixic acid					2	2			1	0
Aminoglycosides										
Streptomycin					2	2			1	0
Gentamicin					2	1			1	0
Neomycin					2	2			1	0
Kanamycin					2	2			1	0
Trimethoprim + sulfonamides					2	0			1	0
Penicillins										
Ampicillin					2	0			1	0

Footnote

Source: LRMADERA

Table Antimicrobial susceptibility testing of S.Typhimurium in animals

n = Number of resistant isolates

	S. Typhimurium							
	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys	
Isolates out of a monitoring programme								
Number of isolates available in the laboratory					1			
Antimicrobials:	N	n	N	n	N	n	N	n
Tetracyclines					1	0		
Amphenicols								
Chloramphenicol					1	0		
Cephalosporins								
3rd generation cephalosporins					1	0		
Fluoroquinolones								
Ciprofloxacin					1	0		
Quinolones								
Nalidixic acid					1	0		
Aminoglycosides								
Streptomycin					1	1		
Gentamicin					1	1		
Neomycin					1	1		
Kanamycin					1	1		
Trimethoprim + sulfonamides					1	0		
Penicillins								
Ampicillin					1	0		

Footnote

Source: LRMADERA

Table Antimicrobial susceptibility testing of Salmonella in animals

n = Number of resistant isolates

	Salmonella spp.									
	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys		All animals	
Isolates out of a monitoring programme										
Number of isolates available in the laboratory					3				4	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n
Tetracyclines					3	1			4	2
Amphenicols										
Chloramphenicol					3	1			4	0
Cephalosporins										
3rd generation cephalosporins					3	1			4	1
Fluoroquinolones										
Ciprofloxacin					3	1			4	0
Quinolones										
Nalidixic acid					3	1			4	0
Aminoglycosides										
Streptomycin					3	3			4	4
Gentamicin					3	0			4	0
Neomycin					3	0			4	1
Kanamycin					3	0			4	1
Trimethoprim + sulfonamides					3	1			4	1
Penicillins										
Ampicillin					3	1			4	0

Footnote

Source: LRMADEIRA

Table Antimicrobial susceptibility testing of Salmonella spp. in food

n = Number of resistant isolates

	Salmonella spp.									
	Meat from broilers (Gallus gallus)		Meat from other poultry species		Meat from pig		Meat from bovine animals		Fishery products, unspecified (Molluscan)	
Isolates out of a monitoring programme									no	
Number of isolates available in the laboratory									2	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n
Tetracyclines									2	2
Amphenicols										
Chloramphenicol									2	0
Cephalosporins										
3rd generation cephalosporins									2	0
Fluoroquinolones										
Ciprofloxacin									2	0
Quinolones										
Nalidixic acid									2	1
Aminoglycosides										
Streptomycin									2	2
Gentamicin									2	0
Neomycin									2	0
Kanamycin									2	0
Trimethoprim + sulfonamides									2	0
Penicillins										
Ampicillin									2	0
Fully sensitive									2	0
Resistant to 2 antimicrobials									2	1
Resistant to 3 antimicrobials									2	1

Footnote

Source: LRMADEIRA

Footnote

Source: LRMADEIRA
Sample 1 - *Salmonella nairobi*-sub.gene IIIa-GroupT (O:42,H:2); Sample 2 - *Salmonella mjmwema*-sub-gene II-Group D1 (O:1,9,12; H:b,c,n,x)

Table Breakpoints for antibiotic resistance testing of Salmonella in Food**Test Method Used**

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS
SFM

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content microg	breakpoint Zone diameter (mm)		
		Susceptible ≤	Intermediate	Resistant >	lowest	highest		Susceptible ≥	Intermediate	Resistant ≤
Tetracyclines(1)	NCCLS						30	19		14
Amphenicols										
Chloramphenicol(2)	NCCLS						30	18		12
Fluoroquinolones										
Ciprofloxacin(3)							5	21		15
Quinolones										
Nalidixic acid(4)	SFM						30	19		13
Aminoglycosides										
Streptomycin(5)	NCCLS						10	15		11
Gentamicin(6)	NCCLS						10	15		12
Kanamycin(7)	NCCLS						30	18		13
Trimethoprim + sulfonamides(8)	NCCLS						25	16		10
Cephalosporins										
Cefalexin(9)	SFM						30	18		11
Penicillins										
Ampicillin(10)	SFM						10	17		13

- (1) : IZ - 15-18mm
 (2) : IZ - 13-17mm
 (3) : IZ - 16-20mm
 (4) : IZ - 14-18mm
 (5) : IZ - 11-14mm
 (6) : IZ - 13-14mm
 (7) : IZ - 14-17mm
 (8) : IZ - 11-15mm
 (9) : IZ - 12-17mm
 (10) : IZ - 14-16mm

Footnote

Source: LRMADEIRA
 IZ - Intermediate Zone

2.2. CAMPYLOBACTERIOSIS

2.2.1. General evaluation of the national situation

A. Thermophilic Campylobacter General evaluation

National evaluation of the recent situation, the trends and sources of infection

There is no official program for this zoonosis.

Additional information

There is no official program for this zoonosis.

Diagnostic techniques:

Foodstuffs:

- Internal method based on ISO 10272
- Typing of isolates by Lior method

Other than foodstuffs:

- samples from sheathwashings, semen and intestinal scrapings are plated in Campylobacter agar or Brucella agar supplemented with: SR 69, SR84, SR 85 (C. foetus) and SR 117 (all from Oxoid).
- Biochemical identification.

2.2.2. Campylobacter, thermophilic in foodstuffs**Table Campylobacter in poultry meat**

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. coli	C. lari	C. jejuni	C. upsaliensis	thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus)										
fresh - Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	5	5	2		3		
Meat from turkey										
fresh - Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	1	1			1		
meat preparation										
intended to be eaten cooked - Surveillance - HACCP or own checks by industry	LNIV	S	25g	2	0					

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. upsaliensis	C. lari	thermophilic Campylobacter spp., unspecified
Meat from pig										
minced meat										
intended to be eaten raw - Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	2	0					
Meat from bovine animals										
fresh										
- Surveillance - HACCP or own checks by industry	LNIV	S	25g	1	0					
minced meat										
intended to be eaten raw - Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g	2	0					

2.2.3. Campylobacter, thermophilic in animals

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for Campylobacter, thermophilic	C. jejuni	C. coli	C. lari	C. upsaliensis	thermophilic Campylobacter spp., unspecified
All animals									
zoo animals	LNIV	A	12	0					

2.2.4. Antimicrobial resistance in Campylobacter, thermophilic isolates

2.3. LISTERIOSIS

2.3.1. General evaluation of the national situation

A. Listeriosis general evaluation

Additional information

* The searching of *Listeria* started on 1996 for raw milk and milk cheese (Portaria nº 533/93 from 21st of May has been updated by Portaria 56/96).

Diagnostic techniques:

Foodstuffs - ISO 11290 method

Other than foodstuffs - culture on:

- Palcam agar,
- *Listeria* Selective agar, and
- Blood agar

Biochemical reactions by API Coryne or API *Listeria* strips.

2.3.2. Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Definition used	Units tested	≤100 cfu/g	>100 cfu/g	Total units positive for L.monocytogenes	Listeria monocytogenes presence in x g
Milk, cows'									
raw milk for manufacture									
intended for manufacture of raw or low heat-treated products	UAVISEU	S	25ml		1			0	
Milk, sheep's									
raw milk for manufacture									
intended for manufacture of raw or low heat-treated products									
- Surveillance - HACCP or own checks by industry	DRABL	S	1ml		6			0	
Milk, goats'									
raw milk for manufacture									
intended for manufacture of raw or low heat-treated products	DRAALG		1ml		141			0	
Cheeses made from cows' milk									
soft and semi-soft									
made from raw or low heat-treated milk	LRMADEIRA	B	25g		35			0	
made from pasteurized milk	LRMADEIRA	B	25g		31			0	
- Surveillance - official controls (other than control and eradication programmes)	ASAE	B	100g		166			6	4
- Surveillance - HACCP or own checks by industry	LNIV	S	25g		49			2	2
(*)	UAVISEU	S	25g		95			0	
hard									

Portugal 2005 Report on trends and sources of zoonoses

made from pasteurized milk	LRMADEIRA	B	25g		45		0	
Cheeses made from goats' milk								
soft and semi-soft								
made from raw or low heat-treated milk	DRAALG		1g		1		0	
made from pasteurized milk								
- Surveillance - HACCP or own checks by industry	LNIV	S	25g		2		0	
Cheeses made from sheep's milk								
soft and semi-soft								
made from raw or low heat-treated milk	UAVISEU	S	25g		58		3	
- Surveillance - HACCP or own checks by industry	DRABL	B	25g		5		0	
made from pasteurized milk	LRMADEIRA	B	25g		18		0	
Dairy products (excluding cheeses)								
dairy products, not specified								
ready-to-eat	DRAALG		1g		1		0	

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Definition used	Units tested	=<100 cfu/g	>100 cfu/g	Total units positive for L.monocytogenes	Listeria monocytogenes presence in x g
Meat from broilers (Gallus gallus)									
fresh	LRMADEIRA	S	25g		1			0	
meat products									
cooked, ready-to-eat	INSA	S	25g		2	1	1(3X10 ²)	2	2
- Surveillance - official controls (other than control and eradication programmes)	ASAE	S	100g		120		1	1	
Meat from pig									
fresh	UAVISEU	S	25g		4			0	
(*)	SEGALAB	S	25g		25			6	
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g		2			2	2
meat products									
cooked, ready-to-eat	SEGALAB	S	25g		34			1	
(*)	INSA	S	25g		5	5		5	5
Meat from bovine animals									
fresh	LRMADEIRA	B	25g		10			1	1
- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g		3			0	
meat products									
cooked, ready-to-eat	LRMADEIRA	B	25g		13			1	1
Fish									
raw	LRMADEIRA	S	25g		3			0	
unspecified									
(Fish salad)	INSA	S	25g		1	1		1	1
Fishery products, unspecified									

- Surveillance - official controls (other than control and eradication programmes)	LNIV	S	25g		2		0		
Other processed food products and prepared dishes									
unspecified ready-to-eat foods (Catering)									
	LRMADEIRA	S	25g		1		0		
(Cooked meals)	UAVISEU	S	25g		10		1		
(Vegetarian meal)	INSA	S	25g		1	1	1	1	
Eggs	UAVISEU	S	25g		4		0		
Surimi									
- Surveillance - official controls (other than control and eradication programmes)	ASAE	S	100g		6		1	1	
Vegetables									
(Raw)	INSA	S	25g		1	1	1	1	
Meat, mixed meat									
(Meat meal from bovine and pig meat)	INSA	S	25g		3	1	2(9X10^2)	3	3

Footnote

S-Single;B-Batch

2.3.3. Listeria in animals

Table Listeria spp. in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified	L. innocua
Cattle (bovine animals)	LNIV/LRMADEIRA	A	9	1			
dairy cows	LNIV	A	15	4	2		2
Sheep	LNIV	A	17	1	1		
Goats	LNIV	A	10	3	0		
Gallus gallus (fowl)	LRMADEIRA	A	1	1		1	
All animals							
zoo animals	LNIV	A	1	0			
Solipeds, domestic	LNIV	A	1	1	1		

2.4. E. COLI INFECTIONS

2.4.1. General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

Additional information

At LNIV the following procedures are performed in E. coli isolates of cattle, swine, sheep and goats (strains that are serotyped).

At poultry isolates, serotyping is not being done.

Diagnostic Techniques:

1 - Culture:

Platting in: Tryptose Blood Agar

MacConkey Agar

Minca Agar

To different E. coli colonies, the following biochemical reactions are done:

Simmons Citrate

MR-VP

Adonitol

Dulcitol

Inositol

Mannitol

Sorbitol

Glucose

Sucrose

Raffinose

Malonate

Urease

2 - Serology:

Serotyping by searching somatic (O) and capsular (K) antigens.

3 - Searching of enterotoxins:

- ST (by inoculation in newborn mice)

- LT (by Biken test, Elisa and CHO cells)

4 - Searching of citotoxins:

- in Vero and HeLa cells.

5 - Adesin detection:

- F5, F6, F41

6 - Antibiotic susceptibility testing

2.4.2. Escherichia coli, pathogenic in foodstuffs

Table VT E.coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Escherichia coli, pathogenic	E. coli spp., unspecified	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC O157:H7
Cheeses made from goats' milk	DRAALG	S	10g	1	0			
Dairy products (excluding cheeses)								
ice-cream	DRAALG	S	10g	1	0			
Sauce and dressings								
(Chili sauce)	DRAALG	S	10g	1	0			

Footnote

S-Single

2.4.3. Escherichia coli, pathogenic in animals

Table VT E.coli in animals

	Source of information	Sampling unit	Units tested	Total units positive for Escherichia coli, pathogenic	E. coli spp., unspecified	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC O157:H7	Verotoxigenic E. coli (VTEC) - VTEC spp., unspecified
Cattle (bovine animals) (1)	LNIV	A	150	2				2
Sheep	LNIV	A	102	0				
Goats	LNIV	A	52	0				
Pigs (2)	LNIV	A	153	2				2
Solipeds, domestic	LNIV	A	25	0				
Poultry, unspecified	LNIV	A	96	0				
- at slaughterhouse - Surveillance - official controls (other than control and eradication programmes)	LNIV	F	4	2	2			
Dogs	LNIV	A	55	0				
Cats	LNIV	A	31	0				
Rabbits	LNIV	A	17	0				
Pigeons	LNIV	A	44	0				
Parrots	LNIV	A	20	0				
Birds	LNIV	A	114	0				
(Zoo)	LNIV	A	9	0				
Deer	LNIV	A	7	0				
Zoo animals, all	LNIV	A	306	0				

(1) : 2 - Rought, VT+, Gene eae+

(2) : 2 - 1 Rought, ST+, VT+; 1 O139:K82, VT+

2.5. TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1. General evaluation of the national situation

2.5.2. Mycobacterium in animals

A. Mycobacterium bovis in Bovine Animals

Monitoring system

Sampling strategy

Tuberculosis testing is performed in all bovine, older than 6 weeks of age, using the intra-dermal comparative test.

The herds are classified and sampled according to Council Directive 64/432/EEC and National Dec. Lei nº 272/2000, November 8th.

Frequency of the sampling

The herds are classified and sampled according to Council Directive 64/432/EEC and National Dec. Lei nº 272/2000, November 8th.

Type of specimen taken

Other: intra-dermal comparative test, blood (gamma-IFN), organs

Diagnostic/analytical methods used

§ The National Reference Laboratory (NRL) is Laboratório Nacional de Investigação Veterinária (LNIV) which is also responsible for production and distribution of tuberculin.

Diagnostic techniques:

- direct smear
- guinea-pigs inoculation
- culture in Lowenstein-Jensen and Lowenstein-Jensen TCH.

The classification of Mycobacterium is based on:

- selective culture media used
- smears performed
- lesions on the inoculated guinea-pigs
- biochemical tests

LNIV is responsible for the Mycobacterium isolation on the tuberculin reactors animals and others, following the procedures above mentioned.

Vaccination policy

Vaccination is forbidden.

Other preventive measures than vaccination in place

Pre-movement tests are mandatory for breeding animals.

Control program/mechanisms

The control program/strategies in place

An Eradication Plan for Bovine Tuberculosis is carried out and supervised by DGV.

Measures in case of the positive findings or single cases

- Herd under official restrictions;
- Isolation of suspected or infected animals in the herd;
- Positive animals compulsory slaughtered, under official supervision, with sample collection for laboratory diagnosis;
- Animal movements are forbidden from and to the herd;
- Disinfection of all premises, equipment and materials;
- Testing of all remaining animals;
- Thermic treatment of the milk.

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified	M. avium complex	M. xenopi	M. celatum	M. caprae
Sheep	LNIV	A	39	0							
Goats	LNIV	A	17	1	1						
Pigs	LNIV	A	1816	869			57	808	4		
breeding animals											
unspecified											
boars	LNIV	A	1	1							1
Zoo animals, all	LNIV	A	2	0							
Deer	LNIV	A	31	17	13		1	3			
All animals											
pet animals	LNIV	A	2	0							
Birds	LNIV	A	39	8			6	1		1	

Table Bovine tuberculosis - data on herds - Community co-financed eradication programmes

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds period prevalence	% new positive herds - herd incidence
CONTINENTE	70756	66395	60969	136	103	5	3.676	91.828	0.223	0.169
Região Autónoma dos Açores	12437	3111	1563	0	0	0	0	50.241	0	0
Total	83193	69506	62532	136	103	5	3.676	89.966	0.217	0.165
Total - 1	90292	76786	67468	178	115	4				

Footnote

Source: DGV

Table Bovine tuberculosis - data on animals - Community co-financed eradication programmes

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of new positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
CONTINENTE	1080204	971228	834845	834845	647	478	689	85.958	0.077
Região Autónoma dos Açores	270366	64788	24857	24857	0	0	2	38.367	0
Total	1350570	1036016	859702	859702	647	478	691	82.982	0.075
Total - 1	1389911	1055903	861228	861228	955	712	1327		

Footnote

Source: DGV

Table Bovine tuberculosis - data on status of herds at the end of the period - Community co-financed eradication programmes

Region		Status of herds and animals under the programme															
		Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended				Free		Officially free	
						Last check positive		Last check negative									
Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals		
CONTINENTE		66395	971228	0	0	25	3633	340	8748	124	4959	0	0	70267	1062864		
Região Autónoma dos Açores		3111	64788	0	0	0	0	0	0	0	0	0	0	12437	270366		
Total		69506	1036016	0	0	25	3633	340	8748	124	4959	0	0	82704	1333230		
Total - 1		76786	1055903	0	0	28	3427	399	17548	238	6111	0	0	89627	1362825		

Footnote

Source: DGV

2.6. BRUCELLOSIS

2.6.1. General evaluation of the national situation

2.6.2. Brucella in foodstuffs

Table Brucella in food

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Milk, cows'								
raw								
intended for direct human consumption								
- Monitoring - official sampling	LNIV	S	2	0				
Milk, goats'								
raw milk for manufacture								
intended for manufacture of raw or low heat-treated products								
- Monitoring - sampling by industry	LNIV	S	2	0				
Cheeses made from goats' milk								
soft and semi-soft								
made from raw or low heat-treated milk								
- Monitoring - official sampling	LNIV	S	2	0				
Cheeses made from sheep's milk								
soft and semi-soft								
made from raw or low heat-treated milk								
- Monitoring - official sampling	LNIV	S	8	0				
Milk from other animal species or unspecified	DRAAL	S	1	0				
Cheeses, made from mixed milk from cows, sheep and/or goats								
soft and semi-soft								

made from raw or low heat-treated milk - Monitoring - official sampling							
	LNIV	S	2	0			

2.6.3. Brucella in animals

A. Brucella abortus in Bovine Animals

Status as officially free of bovine brucellosis during the reporting year

Free regions

In the Açores, there are 4 islands (Graciosa, Pico, Flores and Corvo) that are Officially Bovine Brucellosis Free, according to Comission Decision 2002/588/CE of the 11 July 2002.

Monitoring system

Sampling strategy

Serology is performed in cattle older than 12 months of age.
The herds are classified and sampled according to Council Directive 64/432/EEC and Decreto-Lei nº244/2000 (Sep. 27th).

Frequency of the sampling

The herds are sampled according to Council Directive 64/432/EEC and Decreto-Lei nº244/2000 (Sep. 27th) for cattle, sheep and goats.

Type of specimen taken

Other: Blood, milk, organs,vaginal mucus, semen,aborted foetus, placenta.

Diagnostic/analytical methods used

The National Reference Laboratory is Laboratório Nacional de Investigação Veterinária (LNIV), which is responsible for production and distribution of the antigens and control sera used for serological testing, and supervision of the Regional Laboratories.

Diagnostic techniques:

Serology:

Ø Rose Bengal Test (RBT)

Complement Fixation Test (CFT)

If RBT is positive Þ CFT

Bacteriology:

Samples from:

- live animals (milk, vaginal mucus, semen, aborted foetus, placenta)

- dead animals (lung, liver, spleen and lymph nodes)

are plated in Farrel medium (Difco Tryptose Agar + SR83 Oxoid supplement + 10% horse serum)

Typing of isolates:

- agglutination with monospecific antisera (anti-A, anti-M and anti-R)

- growth on tryptose agar with :

1/50.000 and 1/100.000 of basic fucsin

1/50.000 and 1/100.000 of thionin.

Vaccination policy

Vaccination is forbidden but if an exceptional sanitary situation occurs, vaccination can be allowed with specific protocols between the National Veterinary Authority, the Regional Veterinary Authority and the owner(s) of the cattle.

Other preventive measures than vaccination in place

Pre-movement tests are mandatory for breeding animals.

Control program/mechanisms

The control program/strategies in place

An Eradication Plan for cattle is carried out and supervised by DGV.

Measures in case of the positive findings or single cases

Suspected Herd:

- Herd under official surveillance;
- Epidemiological questionnaire;
- Animal movements are forbidden from and to the herd;
- Isolation of suspected animals in the herd;
- Sample collection for laboratory diagnosis.

Positive Herd:

- Herd under official restrictions;
- Compulsory slaughter of all positive animals, under official supervision with sample collection for laboratory diagnosis;
- Animal movements are forbidden from and to the herd;
- Serological control of all remaining animals;
- Thermic treatment of the milk.

Infected Herd:

- All measures mentioned for positive herds;
- Disinfection of all premises, equipment and materials.

B. Brucella melitensis in Sheep

Monitoring system

Sampling strategy

See *Brucella melitensis* in goats.

Type of specimen taken

Other: Blood, milk, organs, vaginal mucus, semen, aborted foetus, placenta.

Diagnostic/analytical methods used

See *Brucella melitensis* in goats.

Vaccination policy

See *Brucella melitensis* in goats.

Control program/mechanisms

The control program/strategies in place

See *Brucella melitensis* in goats.

Measures in case of the positive findings or single cases

See *Brucella melitensis* in goats.

C. *Brucella melitensis* in Goat

Status as officially free of caprine brucellosis during the reporting year

Free regions

Região Autónoma dos Açores is officially free of ovine and caprine brucellosis, according to Commission Decision 2003/44/CE of the 17th January 2003.

Monitoring system

Sampling strategy

Serology is performed in sheep and goats older than 6 months of age.
The herds are classified and sampled according to Council Directive 64/432/EEC and Decreto-Lei nº244/2000 (Sep. 27th) for sheep and goats.

Frequency of the sampling

The herds are classified and sampled according to Council Directive 64/432/EEC and Decreto-Lei nº244/2000 (Sep. 27th) for sheep and goats

Type of specimen taken

Other: Blood, milk, organs, vaginal mucus, semen, aborted foetus, placenta.

Diagnostic/analytical methods used

The National Reference Laboratory is Laboratório Nacional de Investigação Veterinária (LNIV), which is responsible for production and distribution of the antigens and control sera used for serological testing, and supervision of the Regional Laboratories.

Diagnostic techniques:

Serology:

Sheep and goats

Rose Bengal Test (RBT)

Complement Fixation Test (CFT)

Bacteriology:

Samples from:

- live animals (milk, vaginal mucus, semen, aborted foetus, placenta)
- dead animals (lung, liver, spleen and lymph nodes)

are plated in Farrel medium (Difco Tryptose Agar + SR83 Oxoid supplement + 10% horse serum)

Typing of isolates:

- agglutination with monospecific antisera (anti-A, anti-M and anti-R)

- growth on tryptose agar with :

 - 1/50.000 and 1/100.000 of basic fuchsin

 - 1/50.000 and 1/100.000 of thionin.

Phagotyping has been done in the past, but not nowadays

Vaccination policy

Vaccination of goats and sheeps with ReV1 is beeing done in some regions: In Entre-Douro e Minho, Beira Litoral, Beira Interior and Algarve only in young animals and in Trás-Os-Montes in adults and youngs.

Other preventive measures than vaccination in place

Pre-movement tests are mandatory for breeding animals and for the replacement in depopulated herds.

Control program/mechanisms

The control program/strategies in place

An Eradication Plan for sheep and goats, is carried out and supervised by DGV.

Measures in case of the positive findings or single cases

Suspected Herd:

- Herd under official surveillance;
- Epidemiological questionnaire;
- Animal movements are forbidden from and to the herd;
- Isolation of suspected animals in the herd;
- Sample collection for laboratory diagnosis.

Positive Herd:

- Herd under official restrictions;
- Compulsory slaughter of all positive animals, under official supervision with sample collection for laboratory diagnosis;
- Animal movements are forbidden from and to the herd;
- Serological control of all remaining animals;
- Thermic treatment of the milk.

Infected Herd:

- All mesures mencioned for positive herds;
- Desinfection of all premises, equipment and materials.

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Pigs (1)	LNIV	A	1691	101				101
Deer (2)	LNIV	A	132	0				
Dogs (3)	LNIV	A	7	4				4
Solipeds, domestic (4)	LNIV	A	59	0				
Zoo animals, all (5)	LNIV	A	24	0				

(1) : 15 bacteriological; 1676 serological

(2) : 131 bacteriological; 1 serological

(3) : 1 bacteriological; 6 serological

(4) : serological

(5) : serological

Table Bovine brucellosis - data on herds - Community co-financed eradication programmes

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds period prevalence	% new positive herds - herd incidence
CONTINENTE	70756	61273	57319	271	153	12	4.428	93.547	0.473	0.267
Região Autónoma dos Açores	10735	7188	10261	264	33	2	0.758	142.752	2.573	0.322
Total	81491	68461	67580	535	186	14	2.617	98.713	0.792	0.275
Total - 1	90292	76375	71594	701	270	27				

Footnote

Source: DGV

Table Bovine brucellosis - data on animals - Community co-financed eradication programmes

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of new positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
CONTINENTE	1 080 204	846 735	810 326	810 326	2545	2 289	3669	95.7	0.314
Região Autónoma dos Açores	237 276	1461 178	1866 779	1866 779	1289	1286	1690	127 707	0.69
Total	1 317 480	9929 13	997005	997005	3834	3575	5359	100.412	0.385
Total - 1	1 389 911	10111 74	998501	998501	4846	5121	6153		

Footnote

Source: DGV

Table Bovine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes

Region	Status of herds and animals under the programme												
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended			Free	
					Last check positive		Last check negative		Herds	Animals	Herds	Animals	Animals
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals					
CONTINENTE	61273	846735	0	0	91	8452	936	18738	335	8085	4470	33210	64924
Região Autónoma dos Açores	7188	146178	0	0	115	3423	0	0	3	67	5873	111587	4744
Total	68461	992913	0	0	206	11875	936	18738	338	8152	10343	144797	69668
Total - 1	76375	1011174	0	0	211	8733	1148	18526	371	10496	9883	147170	78679

Footnote

Source: DGV

Table Bovine brucellosis in countries and regions that do not receive Community co-financing for eradication programme

Region	Total number of existing bovine		Officially free herds		Infected herds		Surveillance				Investigations of suspect cases								
							Serological tests		Examination of bulk milk samples		Information about abortions				Epidemiological investigation				
	Herds	Animals	Number of herds	%	Number of herds	%	Number of bovine herds tested	Number of animals tested	Number of infected herds tested	Number of bovine herds tested	Number of animals or pools tested	Number of infected herds	Number of notified abortions whatever cause	Number of isolations of Brucella infection	Number of abortions due to Brucella abortus	Number of animals tested with serological blood tests	Number of positive animals	Number of animals examined microscopically	Number of animals positive microscopically
Região Autónoma dos Açores (1)	1702	33090	1700	99.88	2	0.12	1702	24745	2										
	1702	33090	1700	99.88	2	0.12	1702	24745	2	0	0	0	0	0	0	0	0	0	0
Total																			

(1) : Islands of Graciosa, Pico, Flores and Corvo.

Footnote

Source: DGV

Table Ovine or Caprine brucellosis - data on herds - Community co-financed eradication programmes

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds period prevalence	% new positive herds - herd incidence
CONTINENTE	65748	65748	65452	2019	768	32	1.585	99.55	3.085	1.173
Total	65748	65748	65452	2019	768	32	1.585	99.55	3.085	1.173
Total - 1	67168	66895	65266	1766	650	33				

Footnote

Source: DGV

Table Ovine or Caprine brucellosis - data on animals - Community co-financed eradication programmes

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of new positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
CONTINENTE	2820080	2820080	2143535	2143535	15967	14161	20574	76.01	0.745
Total	2820080	2820080	2143535	2143535	15967	14161	20574	76.01	0.745
Total - 1	2842898	2775348	2152204	2152204	15924	14317	18895		

Footnote

Source: DGV

Ovine or Caprine Brucellosis in countries and regions that do not receive Community co-financing for eradication programme

Region	Total number of existing ovine / caprine		Officially free herds		Infected herds		Surveillance			Investigations of suspect cases					
	Herds	Animals	Number of herds	%	Number of animals	%	Number of herds tested	Number of animals tested	Number of infected herds	Number of animals tested with serological blood tests	Number of animals positive serologically	Number of animals examined microbiologically	Number of animals positive microbiologically	Number of suspended herds	
Região Autónoma dos Açores	3809	13622	3809		13622		719	4269	0	0	0	0	0	0	
Total	3809	13622	3809	0	13622	0	719	4269	0	0	0	0	0	0	

Footnote

Source: DGV

Table Ovine or Caprine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes

Region		Status of herds and animals under the programme															
		Total number of herds and animals under the programme			Unknown		Not free or not officially free				Free or officially free suspended			Free		Officially free	
							Last check positive		Last check negative								
		Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
CONTINENTE		65748	2820080	0	0	931	108904	4989	198119	1609	82830	6710	320101	51509	2110126		
Total		65748	2820080	0	0	931	108904	4989	198119	1609	82830	6710	320101	51509	2110126		
Total - 1		66895	2775348	0	0	892	100027	5082	274673	1183	54507	8473	397854	55346	2015837		

Footnote

Source: DGV

2.7. YERSINIOSIS

2.7.1. General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

Additional information

Diagnostic techniques:

Bacteriology: samples are plated on:

Yersinia CIN Agar, or

Yersinia Selective Agar (Oxoid) supplemented with

Yersinia Selective supplement (Oxoid).

Biochemical reactions by API 20E strips.

2.7.2. Yersinia in foodstuffs

2.7.3. Yersinia in animals

Table Yersinia spp. in animals

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia	Y. enterocolitica	Yersinia unspecified	Y. pseudotuberculosis	Y. enterocolitica - Y. enterocolitica O:9	Y. enterocolitica - Y. enterocolitica O:3
All animals									
zoo animals	LNIV	A	3	1			1		
Parrots	LNIV	A	1	0					

2.8. TRICHINELLOSIS

2.8.1. General evaluation of the national situation

2.8.2. Trichinella in animals

A. Trichinella in pigs

Monitoring system

Sampling strategy

General

Priority given to wild boars, breeding animals and animals not raised under controlled housing conditions.

Type of specimen taken

General

Pigs: diaphragm pillars, tongue, masseter
Wild boars: tongue, diaphragm

Methods of sampling (description of sampling techniques)

General

As determined in Directive 77/96/CEE.

Case definition

General

Detection of one larvae of Trichinella.

Diagnostic/analytical methods used

General

Digestion or compression method (Directive 77/96/CEE).

Notification system in place

Notifiable since 1953 by national law (Decreto-Lei nº 39209, de 14 de Maio).

Results of the investigation including description of the positive cases and the verification of the Trichinella species

All results negative.

Fattening pigs raised under controlled housing conditions in integrated production system

All results negative.

Fattening pigs not raised under controlled housing conditions in integrated production system

All results negative.

Breeding sows and boars

All results negative.

National evaluation of the recent situation, the trends and sources of infection

Cases of trichinelosis are not reported since < 1960.

Additional information

Special training in *Trichinella* detection on slaughterhouses and game activities is given to the meat inspection team.

B. *Trichinella* in horses

Monitoring system

Type of specimen taken

Tongue, masseter and diaphragm.

Case definition

Detection of one larvae of *Trichinella*.

Diagnostic/analytical methods used

Digestion method (Directive 77/96/CEE).

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total animals positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs	LNIV	A	2	0		
fattening pigs						
raised under controlled housing conditions in integrated production system						
- at slaughterhouse - animal sample - meat - Surveillance - official controls (other than control and eradication programmes)	*	A	24252	0		
not raised under controlled housing conditions in integrated production system						
- at slaughterhouse - animal sample - meat - Surveillance - official controls (other than control and eradication programmes)	DRAAL	A	2170	0		
unspecified						
- at slaughterhouse - animal sample - meat - Surveillance - official controls (other than control and eradication programmes)	DRABI/DRARO	A	1321	0		
breeding animals						
raised under controlled housing conditions in integrated production system						
sows and boars						
- at slaughterhouse - animal sample - meat - Surveillance - official controls (other than control and eradication programmes)	**	A	35	0		

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Wild boars						
farmed - at slaughterhouse - animal sample - meat - Surveillance - official controls (other than control and eradication programmes)	LNIV	A	809	0		
	DRAAL/DRABI	A	735	0		

* - DRAEDM/DRATM/DRABL/DRABI/DRAALG

** - DRAEDM/DRABL/DRAALG

2.9. ECHINOCOCCOSIS

2.9.1. General evaluation of the national situation

A. Echinococcus spp general evaluation

Additional information

§ Diagnostic techniques:

Direct examination test.

§ On 1996 a program supervised by DGV was implemented in Alentejo (DRAAAL) (approved by Decision 96/67/CE). On 1998, besides Alentejo the same program was extended to Beira Interior (DRA BI).

The program was extended, in 2000, to the Algarve (DRAALG).

This program consisted on:

- deworming of all dogs present at rabies vaccination , by injection, performed by Municipality Veterinarians.
- deworming tablets were given for a further deworming, in 2-3 weeks time.
- deworming of dogs not present at rabies vaccination, but belonging to farms where sheep and goats with hidatidosis lesions were observed (the information of lesions in farm animals comes through the abattoir).
- educational actions have been taken place, close to people (dog owners and farmers).

The program is still in place in the 3 referred regions.

2.9.2. Echinococcus in animals

Table Echinococcus spp. in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus spp.	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals)	LNIV	A	16	6	1		5
(*)	LNIV	A	unknown	12			12
- at slaughterhouse - animal sample - Surveillance - official controls (other than control and eradication programmes) (Meat Inspection)	DGV	A	480925	48			48
Sheep							
- at slaughterhouse - Surveillance - official controls (other than control and eradication programmes) (Meat Inspection)	DGV	A	1087034	2			2
Pigs	LNIV	A	1	0			
(*)	LNIV	A	unknown	1			1
- at slaughterhouse - animal sample - Surveillance - official controls (other than control and eradication programmes) (Meat Inspection)	DGV	A	5136514	35			35
Dogs	LNIV	A	3	0			

2.10. TOXOPLASMOSIS

2.10.1. General evaluation of the national situation

A. Toxoplasmosis general evaluation

Additional information

Diagnostic techniques:

- Direct examination test.
- Sorology, direct agglutination

2.10.2. Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Sheep	LNIV	A	40	21	21
Goats	LNIV	A	33	15	15
Solipeds, domestic	LNIV	A	1	0	
Cats	LNIV	A	7	1	1
All animals					
zoo animals	LNIV	A	1	0	

2.11. RABIES

2.11.1. General evaluation of the national situation

A. Rabies General evaluation

History of the disease and/or infection in the country

Portugal is free from Rabies since 1961.

In August 1984, the national authorities detected a case of rabies in a 2 months old puppy that came from Maputo (Mozambique) and entered illegally in Portugal the 10th August 1984. The animal was isolated and euthanized. The disease was confirmed by direct immunofluorescence the 31st August of 1984. The veterinary authorities implemented sanitary and prophylactic measures and since then, no further cases were detected and Portugal could maintain its free situation.

Additional information

By national law (Decreto-Lei nº314/2003, December the 17th and Portaria nº 81/2002, January the 24th), the annual dog rabies vaccination is compulsory.

Most of this vaccination is performed by the Municipality Veterinarians and the remaining by the small animal practitioners in their private clinics.

Since 1988, the National Veterinary Authority keeps collaboration with a National Laboratory: Instituto Bacteriológico Câmara Pestana, where foxes heads collected during the hunting period are analysed for Rabies and all the results have been found negative.

2.11.2. Lyssavirus (rabies) in animals

A. Rabies in dogs

Monitoring system

Case definition

Laboratorial confirmation (positive result at the direct immunofluorescence test).

Vaccination policy

By national law (Decreto-Lei nº314/2003, December the 17th and Portaria nº 81/2002, January the 24th), the annual dog rabies vaccination for animals older than 3 months is compulsory.

Other preventive measures than vaccination in place

The other preventive measures are included in the National Control programme.

Control program/mechanisms

The control program/strategies in place

The control Program is defined in the national law (Decreto Lei nº314/2003, December the 17th) and consists in Vaccination and Surveillance Measures for epidemiological survey with definition of specific rules for owners, for commercial purposes, for exhibits and for animal entrance in the country.

Measures in case of the positive findings or single cases

The measures are defined in the national and EU legislation.

Notification system in place

Rage is a national notifiable disease since 1953.

Additional information

In Portugal the annual rabies vaccination is compulsory since 1925.

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	unspecified lyssavirus
Foxes					
wild					
- Surveillance - official controls (other than control and eradication programmes) (Hunted foxes near the spanish border)	IBCP	A	42	0	

2.12. Q-FEVER

2.12.1. General evaluation of the national situation

A. Coxiella General evaluation

History of the disease and/or infection in the country

*

National evaluation of the recent situation, the trends and sources of infection

*

Relevance of the findings in animals, feedingstuffs and foodstuffs to human cases (as a source of infection)

*

Recent actions taken to control the zoonoses

*

Suggestions to the Community for the actions to be taken

*

Additional information

*

2.12.2. Coxiella in animals

Table Coxiella in animal

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Coxiella	C. burnetii
Cattle (bovine animals)	LNIV	A		225	1	1
Sheep	LNIV	A		2		0

Footnote

Serological method by complement fixation

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1. *ESCHERICHIA COLI*, NON-PATHOGENIC

3.1.1. General evaluation of the national situation

3.1.2. Antimicrobial resistance in *Escherichia coli*, non-pathogenic isolates

Table Antimicrobial susceptibility testing of *E. coli* in animals (Part A)

n = Number of resistant isolates																
E. coli																
	Cattle (bovine animals) (DRABL)	Cattle (bovine animals) (LRMADEIRA)	Cattle (bovine animals)	Pigs (FMV)	Pigs	Sheep (DRABL)	Gallus gallus (fowl) (DRABL)	Gallus gallus (fowl)	Gallus gallus (fowl) (LRMADEIRA)	Turkeys (DRABL)						
Isolates out of a monitoring programme						yes			no							
Number of isolates available in the laboratory						6			20							
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Tetracyclines																
Doxycyclin			13	12							31	21			1	1
Oxytetracyclin	5	4					6	3	31	28			20	17	1	1
Amphenicols																
Chloramphenicol			13	3									20	10		
Cephalosporins																
3rd generation cephalosporins			13	4									20	7		
Cefalexin	5	2					6	3								
Cefotaxim																
Cefoperazone	5	0					6	0								
Fluoroquinolones																
Ciprofloxacin			13	4									20	12		
Enrofloxacin							31	9							1	1
Flumequin							31	12							1	1
Norfloxacin							31	3							1	1
Quinolones																
Nalidixic acid			13	5							31	19			1	1
Oxolinic acid							31	18							1	1
Aminoglycosides																
Streptomycin	5	1	13	8			1	1			6	5			20	19

Gentamicin	5	0	13	1							6	0	4	0		20	7		
Neomycin	5	0	13	8							6	0	31	3		20	9	1	0
Kanamycin			13	5												20	11		
Spectinomycin													31	6			1	0	
Polymyxins	5	5									6	6							
Colistin	5	1									6	3	31	10			1	0	
Trimethoprim + sulfonamides	5	1	13	6							6	2	31	14		20	13	1	1
Lincosamides																			
Lincomycin	5	5									6	6							
Macrolides																			
Spiramycin													31	3			1	0	
Penicillins																			
Amoxicillin													31	19				1	1
Ampicillin	5	1	13	10							6	3	31	22		20	19	1	1
Penicillin	5	5									6	6							
Cloxacillin	5	5									6	6							
Fully sensitive	5	0									6	0	31	0				1	0
Resistant to 1 antimicrobial	5	0			1	1					6	0	31	0				1	0
Resistant to 2 antimicrobials	5	0									6	0	31	3			1	0	
Resistant to 3 antimicrobials	5	0									6	0	31	2			1	0	
Resistant to 4 antimicrobials	5	1									6	0	31	5			1	0	
Resistant to >4 antimicrobials	5	4									6	6	31	21			1	1	

(1) : Novobiocin

Footnote

* Isolates out of a monitoring programme: Cattle (DRABL); Gallus gallus (DRABL); Turkeys (DRABL).

** Number of isolates available in the laboratory: Cattle (LRMADEIRA)-13; Cattle (DRABL)-5; Pigs (FMV)-1; Gallus gallus (DRABL)-31; Turkeys (DRABL)-1.

Table Antimicrobial susceptibility testing of *E. coli* in animals (Part B)

n = Number of resistant isolates						
E. coli						
Turkeys		All animals - unspecified (LRMADEIRA)	All animals - unspecified (FMV)			
Isolates out of a monitoring programme		no		no		
Number of isolates available in the laboratory		18		8		
Antimicrobials:	N	n	N	n	N	n
Tetracyclines						
Doxycyclin						
Oxytetracyclin			18	16	8	4
Amphenicols						
Chloramphenicol			18	9		
Cephalosporins						
3rd generation cephalosporins			18	8		
Cefalexin						
Cefotaxim					8	0
Cefoperazone						
Fluoroquinolones						
Ciprofloxacin			18	11		
Enrofloxacin						
Flumequin						
Norfloxacin						
Quinolones						
Nalidixic acid			18	11	8	0
Oxolinic acid						
Aminoglycosides						
Streptomycin			18	13	8	4
Gentamicin			18	3	8	1
Neomycin			18	10	8	0
Kanamycin			18	10	8	0
Spectinomycin						

Polymyxins						
Colistin						
Trimethoprim + sulfonamides	18	8	8			3
Lincosamides						
Lincomycin						
Macrolides						
Spiramycin						
Penicillins						
Amoxicillin						
Ampicillin	18	15	8			5
Penicillin						
Cloxacillin			8			2
Fully sensitive			8			1
Resistant to 1 antimicrobial						
Resistant to 2 antimicrobials			8			0
Resistant to 3 antimicrobials			8			3
Resistant to 4 antimicrobials			8			1
Resistant to >4 antimicrobials			8			1

(1) : Novobiocin

Footnote

*Isolates out of a monitoring programme: Cattle(DRABL); Gallus gallus (DRABL); Turkeys (DRABL).

***Number of isolates available in the laboratory: Cattle (LRMADEIRA)-13; Cattle (DRABL)-5; Pigs (FMV)-1; Gallus gallus (DRABL)-31; Turkeys (DRABL)-1.

Table Antimicrobial susceptibility testing of E. coli in Cheeses, made from unspecified milk or other animal milk - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Table Antimicrobial susceptibility testing of E. coli in food

n = Number of resistant isolates										
	E. coli									
	Meat from broilers (Gallus gallus)	Meat from other poultry species	Meat from pig	Meat from bovine animals	Cheeses, made from unspecified milk or other animal milk (LRMADEIRA)					
Isolates out of a monitoring programme					no					
Number of isolates available in the laboratory					33					
Antimicrobials:	N	n	N	n	N	n	N	n	N	n
Tetracyclines									33	19
Amphenicols										
Chloramphenicol									33	1
Cephalosporins										
Cefalexin									33	0
Fluoroquinolones										
Ciprofloxacin									33	2
Quinolones										
Nalidixic acid									33	5
Aminoglycosides										
Streptomycin									33	30
Gentamicin									33	12
Neomycin									33	14
Kanamycin									33	25
Trimethoprim + sulfonamides									33	0
Penicillins										
Ampicillin									33	10
Fully sensitive									33	0
Resistant to 1 antimicrobial									33	1
Resistant to 2 antimicrobials									33	1
Resistant to 3 antimicrobials									33	10
Resistant to 4 antimicrobials									33	6
Resistant to >4 antimicrobials									33	17

Footnote

Source: LRMADEIRA

Table Breakpoints used for antimicrobial susceptibility testing of E. coli in Food**Test Method Used**

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS
SFM

Escherichia coli, non-pathogenic	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content microg	breakpoint Zone diameter (mm)		
		Susceptible ≤	Intermediate	Resistant >	lowest	highest		Susceptible ≥	Intermediate	Resistant ≤
Tetracyclines	NCCLS						30	19		14
Amphenicols										
Chloramphenicol	NCCLS						30	18		12
Florfenicol										
Fluoroquinolones										
Ciprofloxacin	SFM						5	21		15
Enrofloxacin										
Quinolones										
Nalidixic acid	SFM						30	19		13
Trimethoprim										
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin	NCCLS						10	15		11
Gentamicin	NCCLS						10	15		12
Neomycin										
Kanamycin	NCCLS						30	18		13
Trimethoprim + sulfonamides	NCCLS						25	16		10
Cephalosporins										
Cefalexin	SFM						30	18		11
3rd generation cephalosporins										
Penicillins										
Ampicillin	NCCLS						10	17		13

Footnote

Source: LRMADIRA

See breakpoints for antibiotic resistance testing of Salmonella

4. FOODBORNE OUTBREAKS

Foodborne outbreaks are incidences of two or more human cases of the same disease or infection where the cases are linked or are probably linked to the same food source. Situation, in which the observed human cases exceed the expected number of cases and where a same food source is suspected, is also indicative of a foodborne outbreak.

A. Foodborne outbreaks

System in place for identification, epidemiological investigations and reporting of foodborne outbreaks

*

Description of the types of outbreaks covered by the reporting:

*

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

*

Relevance of the different causative agents, food categories and the agent/food category combinations

*

Relevance of the different type of places of food production and preparation in outbreaks

*

Evaluation of the severity and clinical picture of the human cases

*

Descriptions of single outbreaks of special interest

*

Control measures or other actions taken to improve the situation

*

Suggestions to the community for the actions to be taken

*

Additional information

*

Table 12. Foodborne outbreaks in humans

Causative agent	General outbreak	Family outbreak	Total Number in persons			Source		Type of evidence		Location of exposure	Contributing factors
			ill	died	in hospital			Suspected	Confirmed		
1	2	3	4	5	6	7		8	9	10	
Salmonella - S. Enteritidis	1		140		20	cooked fish meal	yes	confirmed in left-overs	kindergarden	deficiencies in food preparation	
Salmonella - S. Enteritidis	1		20			cooked fish meal	yes	confirmed in left-overs	school canteen	deficiencies in food preparation	
Staphylococcus - S. aureus		1	6		6	soft cheese (goat)	yes	confirmed in left-overs	household	deficiencies in food handling	

Footnote

Source: INSA